

COULD YOU PASS THESE EXAMINATIONS IN WASHINGTON SCHOOLS?

If you were in these grades of the public schools could you pass the examinations here offered? The papers given below show what is expected of the pupils by the authorities. The question is, could you endure the tests successfully?

There are no final examinations from grade to grade of the public schools, pupils being promoted on the results of their daily work, but when there is doubt as to the propriety of promoting pupils to the high school it is the custom to hold written tests. Specimens of such examinations are given here.

Those who look over these papers will probably recall memories of their youth, when they had such ordeals to face and overcome. They will recall how hard these examinations were, and what a thrill of relief came over them when all was over. And they can try if now, after the lapse of years, memory or ingenuity would serve to get them through such a test.

Could You Get Into the High School if You Had to Pass These?

GRAMMAR.

- "So the strong will prevail," and Alden went on his errand.
- Out of the street of the village and into the paths of the forest.
- Into the tranquil woods where the blue birds and robins were building.
- Towers in the populous trees with hanging gardens of verdure.
- Peaceful aerial cities of joy and affection and freedom.
- State what is meant by the following expressions in the above stanza: (a) the tranquil forest, (b) populous trees, (c) hanging gardens, (d) aerial cities.
- Select as epithets from extract (a) the adverbial modifiers, (b) the adjective modifiers.
- Parse the quoted words.
- Classify the nouns in the extract.
- Give the meaning of each stem and prefix in the following words: (a) transact, (b) discord, (c) excursion, (d) adjust, (e) diameter, (f) synthesis, (g) anarchy, (h) postpone.
- Define the term complement. Give an example of each kind.
- How are verbs classified according to their meanings and use? How are they classified according to their form? Give examples.
- What is a relative clause? Is the case of a relative pronoun determined by its antecedent or by its use?
- Use a relative pronoun as (a) the subject of a verb, (b) possessive modifier, (c) a direct object, (d) the object of a preposition.

ALGEBRA.

- Find the value per pound of a mixture of 6 pounds of sugar at 4 cents, and 2 pounds at 6 cents.
- Simplify:
$$\frac{4x^2 - 9}{x^2 - 4} \div \frac{x^2 - 3x + 2}{x^2 - 5x + 6}$$
- The sum of 2 numbers is 30, and 7 times the smaller exceeds 8 times the greater by 10. Find the numbers.
- Factor:
$$x^4 - 16x^2 + 64$$

$$x^4 - 10x^2 + 25$$

$$x^4 - 10x^2 + 25$$

$$x^4 - 10x^2 + 25$$
- Find H. C. F.
$$x^4 - 10x^2 + 25$$

$$x^4 - 10x^2 + 25$$

COMPOSITION.

- Give the name and author of one of the sets of library books furnished for the home reading this year, and tell where and when (approximately) the scene of the story is laid.
- Select from the story a subject for composition; outline, and write not less than one, nor more than two pages, and tell whether your composition is narrative or descriptive.
- To be dictated.
- Define (a) cancellation, (b) numerator, (c) exact divisor, (d) state two differences between a decimal and a common fraction.
- What is the amount of \$3.75 from October 10, 1900, to May 15, 1902, at 4% per cent?
- What will it cost to polish the faces of a block of marble 8 feet long, 5 feet wide, and 3 feet thick, at 22 cents per square foot?
- A carriage maker sold two carriages at \$500 each. On one he gained 20 per cent, and on the other he lost 25 per cent. What was his gain or loss on the whole sale?
- A merchant bought 400 yards of print at 8 cents per yard, and marked it at 25 per cent above cost, but afterward sold it at a reduction of 20 per cent on his asking price. What were his profits?
- A clerk's salary is \$2,400. What sum of money must be invested in 6 per cent stock selling at 110 to get an income of \$1,400?
- What is the entire surface of a cube, the contents of which are 42.575 cubic feet?

CIVICS.

- State when the Union was formed; its chief fundamental difference from the Confederation; the chief differences in detail.
- Name and define the three great branches of the United States Government. Explain the necessity for a national judiciary.
- Find authority in the Constitution for the following things that Congress has done:
(a) It has established a military academy at West Point.
(b) It has given public lands to Pacific railroads.
(c) It has ordered surveys of the coast.
(d) It has exercised control over the District of Columbia.
- Compare the strength of the National Government today with its strength in the past.
- What is the most comprehensive duty of the President? Name the auxiliary executive departments and their duties.

PERHAPS These Tests in the Eighth Grade Schools Would Worry You Somewhat.

ARITHMETIC.

- (Oral.)
1/4 per cent of 100.
33 1/3 per cent of 480.
1-5 is 50 per cent of what?
16 is what per cent of 12?
What per cent of a number is 2-7 of the number?
- Define:
Commission, corporation, par value, premium.
- How many shares of railroad stock at 107 1/2, brokerage 1/4 per cent, can be purchased for \$3,400?
- Two parlor suits were sold at \$180 each; one at a gain of 20 per cent; the other at a gain of 25 per cent; what was the difference in their cost?
- What sum must be invested in Connecticut 4's at 110 to get an income of \$1,400?
- How much money should my lawyer remit to me if he retains \$352.50 as his commission at 7 per cent?
- If 41-6 tons of hay cost \$68.75, how many tons may be bought for \$224.40?
- Find interest on \$87.50 at 4 1/2 per cent from May 15, 1902, to present date.
- Simplify:
$$\frac{7x^2 - 4x - 7}{x^2 + 3x - 10}$$

WORD ANALYSIS.

- Define the Saxon verbs:
Spellian, witan, wefan, gifan, smitan, secgan, secgan, secgan.
- Give opposites of:
(a) Give opposites of heavy, reckless.
(b) Give synonyms of reckless, reckon.
- (a) What is the Saxon word for day?
- Give the meanings of Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday.
- Who was Thor?
- Who was Sator?
- What does daisy mean?
- Define:
(a) brand, shire, only, troth, wrong, reddish, wool, wizard, share.
- Explain the derivation of the following words, giving the original meaning of each:
went, and, kernel, if, wrong, black, crown.
- White sentences containing atonement, shred, brand.
What part of speech is "brand" in your sentence?
- What parts of speech does the Saxon element in English include?
- Name in order the eight sources from which words have been added to the original Anglo-Saxon speech, giving one example for each.

CIVICS.

- Write an expository paragraph either on "How to Be Naturalized," or on "How to Obtain a Patent."
- Define:
(a) Citizen.
(b) Impeachment.
(c) Excise tax.
- Distinguish between a direct and an indirect tax.
- Give powers of Congress.

Russian Ice Railway on Lake Baikal

ONE of the most interesting phases of Russia's military activity in the present war with Japan is the construction of a railway across the frozen waters of Lake Baikal, for the purpose of transporting troops.

A railway upon ice is not a novelty in Russia. For example, the "Pail Mail Gazette," the return of winter and the freezing of the Neva finds St. Petersburg possessed of an ice railway which fills the place of the suspended steamboat service, while the Volga at certain points is crossed in similar fashion during the winter months.

Has Light Rails.
An ice railway consists of somewhat lighter rails than those used on land, and the rails are placed on very long sleepers (twenty feet being the length generally adopted), in order that the weight may be distributed over a wide surface. A rough estimate of the cost of laying this type of railway is \$175 per mile.

However, the Neva, Volga, and other ice railways are only small affairs in regard to length compared to that which has just been opened for traffic upon the "unfathomable waters" of Lake Baikal. The latter starts from the riverside station at Baranchiki, on the Irkutsk shore, and terminates at the Missovai station of the Trans-Baikal section.

Steamer Route Difficult.
The steamer route between these points is forty miles long, but the line makes a wide sweep in order to avoid the broken surface of ice left by the ice-breaking steamers, and to allow of the line being used as an auxiliary means of transit when the steamers begin running again; but the ice is still of sufficient thickness to bear the railway.

The Advantage Gained.
On the face of it, the chief advantage to be gained from the Baikal Ice Railway is that it obviates the trouble, confusion, and expense attendant upon the necessity, were it not constructed, of "breaking bulk" at either waterside station. It would appear, however, that men, horses, and military stores, etc., still "break bulk." That is to say, it has not been found possible to make physical junctions with the railroad on either shore, which is due probably to the ice being heaped up into hummocks by the last efforts of the ferry steamers and trading craft. The line, therefore, must be a light narrow-gauge one, as there would be no object in laying the broad Russian gauge (five feet), if the ordinary rolling stock of the Siberian Railway could not be switched on to it.

Facts About Lake Baikal.

Lake Baikal covers an area of 12,500 square miles, lies 1,350 feet above sea level, and is distant from Moscow 3,440 miles; from Port Arthur, 1,996 miles, and from Vladivostok, 1,815 miles. It is frozen over to the end of April, although a passage of sorts can be maintained by means of ice-breakers until about the middle of January.

There are only two of these ships, namely, the Baikal, which has accommodation on its lower deck for three

- Three relating to finance.
- Three relating to commerce.
- Four relating to miscellaneous subjects.
- Answer briefly:
(a) When are censuses taken?
(b) What are the qualifications for Senatorship?
(c) How is a vacancy in the House of Representatives filled?
(d) Name special powers of the House of Representatives.
(e) Name classes and rates of mail matter.
(f) Name five uses of United States revenue.
(g) Name three kinds of paper money issued by the Government.

GRAMMAR.

- "All travelers," said the woman, "are welcome here for the sake of one."
"And who is that one," said he, "for whose sake you make all welcome?"
- Classify the pronouns in the sentence above.
- Give the declension of the quoted word.
- Analyze the first sentence of the quotation above, telling—
(a) Kind—reason.
(b) Subject—predicate.
(c) Predicate verb.
- Select the pronoun you think correct and tell why:
(a) Who do you think will be elected?
(b) Whom do you expect to call on?
(c) Whom do you expect to call on?
- Classify the verbs in the following according to meaning, form, and use:
(a) John writes slowly.
(b) Mary was learning her lesson.
(c) Louise is my cousin.
- Express the verb drawn, in—
(a) The present progressive tense.
(b) The past perfect tense.
(c) The simple future with I—with he.
- Give the conjugation of write, on shipboard, and present perfect tense.
(a) Indicative mode, future perfect tense.
(b) Indicative mode, future perfect tense.
- Insert the proper form of lie or lay, and tell why:
(a) Slowly and sadly we.....him down.
(b) I found it.....on the floor.

EXAMINATION ON VERBS.

- Change each verb in the following sentences to the corresponding perfect tense:
(a) The sleeper awakes.
(b) He gets along fairly well.
(c) The water in my pitcher froze.
(d) The boys are eating their supper.
- Tell the voice of each verb in the following:
(a) The lawn is being watered by the gardener.
(b) If it rains?
(c) Tom has been mending his kite.
(d) By whom was this ink spilled?
- Give the principal parts of:
(a) Lay.
(b) Set.
(c) Show.
(d) Be.
- Give all the other tense forms of "He hears."
- Tell the mode of each verb in the following:
(a) Gather up the fragments that remain.
(b) If it be possible, live peacefully with all men.
(c) God sifted a whole nation that He might send choice grain over into this wilderness.
- Give the other tenses of "I may write."
- Tell mode and tense of each of the verbs in the following sentences:
(a) We have lost it.
(b) You should have come.
(c) I wish he were here.
(d) She might have been perfect.
- Parse the verb in the following sentence: "The book was placed upon the table."

HISTORY.

- What led to the establishment of Washington as the National Capital?
- Give five important facts in connection with the establishment of Washington as a National Capital.
- Give the four forms of government by which Washington has been governed since its establishment as a National Capital.
- Make an outline of the first municipal government of Washington.
- Tell what you know about the present form of government of Washington.

ALGEBRA.

- Dictate, having pupils write answers only, and in their simplest forms.
1. If 2 oranges cost 4 cents, what do 5 oranges cost?

ENGLISH.

First Year.

- Classify the following sentences as to: (a) Structure, (b) Subject-matter (kind of composition).
1. "There can be no fairer ambition than to excel in talk; to be affable, gay, ready, clear, and welcome; to have a fact, a thought, or an illustration pat to every subject."—R. L. Stevenson.
2. "Alan drew a dirk which he held with his left hand in case they should run in under his sword."—R. L. Stevenson.
3. "At the north end, however, winter reigned, and there were tiny ridges of fine snow on the floor, sifted in by the wind through the cracks in the window frames."—Van Dyke.
- Define, in accordance with the principles of good definition, the following words:
(a) Conjugation.
(b) Mood.
(c) Voice.
(d) Future-perfect.
- State and illustrate by sentences the uses of the following tenses:
(a) Present-perfect.
(b) Past-perfect.
(c) Future-perfect.
- Give the principal parts of:
(a) Lie, meaning to recline.
(b) Lay.
(c) Sit.
(d) Set.
- Conjugate:
(a) Lie and lay, in the present-perfect; indicate.
(b) Sit and set, in the past (imperfect or preterit) tense.
- From a carefully prepared outline, write a descriptive paragraph on one of the following subjects:
A Curio; A Street Character.
- Answer the following questions in well-constructed, well-punctuated sentences:
To what kind of composition do your answers to question II belong?
State the purpose of this kind of composition.
What is the most essential requirement of the language of this kind of composition? Why?

ENGLISH.

Second Year.

- Outline and write three connected paragraphs on—
Tennis, baseball, school athletics, or the school paper.
What devices do you use for making transitions?
- (a) When is a word or construction in good use?
(b) Why are the following terms not in good use in this country: Chemist, for druggist; artist, for engraver; concertize, for concert; gent?
(c) Give the rule for the use of shall and will; illustrate.
- What are the two essentials of good definition? Illustrate by defining three terms.
- Explain and illustrate:
Sign proof, proof by example, proof by authority.

ENGLISH.

Third Year.

- Discuss:
The relations of Cassius to Brutus, or the character of the conspirators in "Julius Caesar." (Keep to the subject and let the division into paragraphs be carefully made.)
- Write an argumentative paragraph, giving your views of Macduff's conduct in leaving Scotland.
- (a) Is "Hamlet" a tragedy or a comedy?
(b) What is the climax?
(c) During the period of complications what knots are tied?
(d) How does the fifth act show the culmination of the plot? Write answer to "d" in a brief paragraph.
- For what do Wyatt and Curry stand in literature?
(b) Trace seven steps in the history of the Arthurian legends.

ENGLISH.

Fourth Year.

- Discuss Addison's relations with Steele.
- Give a brief sketch of Addison's life.
- Discuss Addison's style.
- Give Carlyle's estimate of Burns as a poet.
- What is the most important characteristic of Burns' work, and what application has it to our lives?
- What special trait or traits of Burns do you most admire, and why? (Answer two of the questions on Addison, all on Burns.)

HISTORY—GREEK.

First Year.

- Compare the resources of Athens with those of Sparta at the beginning of the Peloponnesian war.
- How did Philip of Macedonia gain control of Greek affairs?
- What were the lasting effects of Alexander's conquests upon the Greeks and upon Asia?
- Give some reasons why war was likely to break out between the Spartans and the Athenians.
- Describe the Deian League; its origin, its object, its organization, its final results.
- To what city and to what man is a large share of the Greek triumph over Xerxes due? Explain fully.
- Describe briefly the battle of Thermopylae and explain the cause of Persian victory.

HISTORY—ROMAN.

First Year.

- Draw a map of Italy, locating (a) mountains, (b) the peoples of central Italy.
- Name the Kings of Rome in order and give the one most important thing to be remembered of each.
- Explain the government of Rome under the early kings.
- Describe the causes and results of the first secession of the Plebeians.
- What were the steps by which the Plebeians secured equal rights?
- What is the chief importance of the wars of Rome before the first Punic war?
- What are the reasons for the growth of Roman power before the Punic wars?
- Explain the organization of the Roman army.

OR if You Reached the High School, Could You Stay There if You Had These Put Before You?

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- Give some reasons why war was likely to break out between the Spartans and the Athenians.
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IX. Who were:

- (a) Brutus.
- (b) Fabius Maximus.
- (c) Regulus.
- (d) Cincinnatus.
- (e) Horatius.
- (f) Tribune.
- (g) Nunciupia.
- (h) Patrician.
- (i) Ager Romanus.

HISTORY—ENGLISH.

Second Year.

- At the accession of the Tudors what change took place in the nature of the government? Show why this change was possible.
- England had submitted to the absolute government of the Tudors. Why did the English refuse to submit to the Stuart absolutism?
- What great religious upheaval took place during the reign of Henry VIII? Outline this movement during the three subsequent reigns. (Expand your outline.)
- Why was it impossible for England to remain a commonwealth? Compare England under the commonwealth with England during the first two Stuarts.
- Give the tyrannical acts of the King and the opposite legislative measures of parliament from the restoration of 1660 to the revolution of 1688.

CHEMISTRY.

Second Year.

- (Written review after study of nitrogen, air, and nitrogen compounds.)
I. How may nitric acid be prepared? Give only essentials.
How is it tested? Give its properties. Give equation showing how it is prepared.
- How can you compare the weight of any liquid with that of water?
- Give preparation of nitrogen, both in general and in particular, stating why you use the latter method. Name its properties.
- Write equation, showing action of ammonium hydroxide on hydrochloric acid. Give two names of the compound formed.
- In what three ways are gases collected? What gases are not collected over water? Why? How do you know how to collect these?
- What four substances may be made from ammonium nitrate, other chemicals being used with it as necessary?
- Li what two ways may ammonium chloride be formed? Any chloride?
- How are nitrates formed? How do you think sulphate may be made? Phosphate? Borates?

PHYSICS.

Second Year.

- The periods of three pendulums are in the relation of 1 to 4 to 5. What do we know in regard to their length? Define the term "period" and "length of a pendulum."
- Give the three laws of hydrostatics with a proof for each law.
- Barometer. All about it.

PHYSICS.

Third Year.

- Give the present and former theory of heat, with phenomena upon which each is founded.
- Show how the following phenomena are explained on the present theory:
(a) Expansion, (b) contraction, (c) condensation, (d) heat of fusion, (e) specific heat.
- Calculate the resulting temperature from mixing 2 kilos of lead at 110 degrees C. with 600 grams of ice cold water contained in a brass vessel. The mass of the vessel is 75 grams and the specific heat of brass is 0.12; of lead is 0.03.
- At what temperature will a liter of air weigh 1.419 g., the barometer remaining unchanged. A liter at 0 degrees C. weighs 1.293 g.
- How much water will be formed by putting 500 grams of shot at 90 degrees C. into a hole made in a block of ice? The specific heat of shot is 0.035.
- Discuss the topic, "The Mechanical Equivalent of Heat."

PHYSICS.

Fourth Year.

- Define velocity, average velocity, and uniform velocity. Define acceleration, average acceleration, and uniform acceleration. What acceleration is supplementary.

MANCHURIA WELL WORTH DEVELOPING

MANCHURIA is a vast region, being the Eastern Tartary of the old geographers. There are three great provinces. That of Shengking, nearest China proper, is highly cultivated. The northeastern provinces are not so well developed, being infested by brigands. The cities are walled. In spring and summer there is much rain. The soil is *seroz*. The roads are bad. Hauling is done mainly in winter, when streams of carts line the great roads.

What with the snows and the spring rains floods are common in Manchuria. The Sungari River, which flows north into the Amur, is an immense stream. Sturgeon weighing a thousand pounds are caught in it, and it is famous for its salmon.

Only the travelers who have attempted to reach the Long White Mountain of the Manchurian-Korean border probably appreciate the difficulties of military movements in those parts. It is a roadless region of rocks, forests, and streams. On top of the Long White, the sacred mountain of the Manchus, 8,000 feet high, is an immense lake, beautifully clear. Here, or hereabouts, rise the Yalu, Sungari, and Tumen Rivers. In spring the forests are filled with wild flowers, much like our own Pennsylvania flowers.

At its mouth during spring tides the Yalu rises and falls thirty feet. The sand banks at low water stretch for miles.

On the Korean side of the Yalu the hills are more or less parallel with the river, with valleys here and there, and on the Manchurian side there are numerous short valleys with narrow entrances from the Yalu.

Manchuria is a country that is capable of being highly developed. That land, less than 100 miles from the 200 miles of rich agricultural land, with its last year's superabundant harvest waiting in village granaries for the Russian soldiers to buy. In the Amur province are to be found hundreds of thousands of tons of grain, which the farmers were afraid to send down to the south during the winter. The Manchurian farmer works hard. He is at it before day and quits at dark.

The extreme point of the Port Arthur peninsula is a mass of basaltic rock called "Venerable Iron Mountain." It was for a long time an eagle preserve, where birds were netted and sent to Pekin as part of the Manchurian tribute.

needed to get up a speed of sixty miles an hour in two minutes.

II. What is the acceleration of a body whose velocity changes from 7-21 while it travels 100 feet?

III. The course of two steamers are at right angles to each other, and their speeds are as 12 and 16 miles an hour respectively. If both at first are one mile distant from the point where their tracks cross, find how near they approach each other and how soon they are closest together?

IV. What is the acceleration when a force of 26 units acts on a mass of 4; and how far will the mass move in 10 seconds?

V. If a mass of 6 pounds is propelled so as to gain a velocity of 10 feet a second every second, what is the magnitude of the force urging it?

ALGEBRA.

First Year.

- Define: (a) involution; (b) a surd; (c) a fractional exponent; (d) simplest form of a surd.
- Solve:
$$\begin{cases} x + 3y = 9 \\ 4x + y = 5 \end{cases}$$

$$\begin{cases} x + y = 7 \\ 1x + 4x = 4 \end{cases}$$
- Solve:
$$\begin{cases} 5x + y + 4z = -5 \\ 3x - 5y + 6z = -20 \\ x - 3y - 4z = -21 \end{cases}$$

4. A and B can do a piece of work in 4 days. After working together 3 days, B finishes the work in 6 days. In how many days can each do the work alone?

5. Expand by formula: $(\frac{a}{2} - \frac{b}{3})^5$

(b) Simplify:
$$1 - \frac{(-3x^2y)^4}{4 + 3}$$

$$2 - \frac{(-x^2y)^7}{2 + n}$$

$$3 - \frac{(3m + 4n)^{12}}{pq}$$

$$4 - \sqrt[4]{144} + \sqrt[4]{4n + 2n + 6}$$

$$5 - \sqrt[5]{-243} + 25^{1/5}$$

6. Find the square root of:
$$9x^2 - 6x + 1 + \frac{4x}{15} + \frac{4x^2}{9}$$

7. Find the cube root of:
$$125x^3 + 75x^2 + 25x + 2 - 215x^2 + 8x - 90x$$

8. Simplify:
$$a - \left(\frac{x}{n}\right)^{-1} \div \left(\frac{x}{m+n}\right)^{-1}$$

$$b - \left(\frac{ay}{x}\right)^{-1} \times \left(\frac{bx^2}{y}\right)^{-1} \times \left(\frac{y^2}{42xy}\right)^{-1}$$

9. Simplify:
$$a - 2\sqrt{\frac{5}{3}} + 5\sqrt{\frac{1}{6}} + 3\sqrt{\frac{4$$